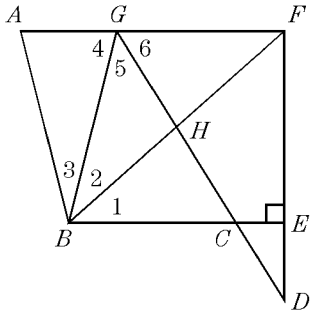
Geometry Fall Benchmark Review Name _____

1. Give all possible names for the ray shown.


2. Using the diagram, what is wrong with saying "$\angle E$ is a right angle"?




3. Write the converse of the following statement and determine if it is a true statement.

"If two angles are adjacent, then they share a common vertex."

4. Write the converse of the following statement and determine if it is a true statement.

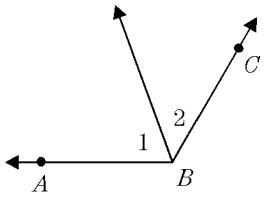
"If two lines are perpendicular, then they intersect to form a right angle."

5. If two angles are complementary, then they are both _____ angles.

6. If a linear pair of angles are congruent, then they must be _____ angles.

7. Find the value of $x$ given:

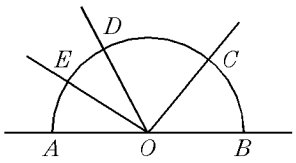
$$m\angle 1 = 6x - 5$$
$$m\angle 2 = 4x$$
$$m\angle ABC = 120$$




8. Find the value of $x$ given:

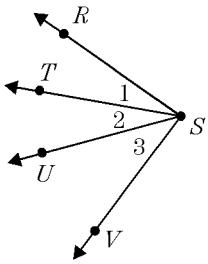
$$m\angle 1 = 9x$$
$$m\angle 2 = 6x + 4$$
$$m\angle ABC = 114$$

9. In the diagram, $m\angle COE + m\angle AOE$ is equal to the measure of what angle?




10. In the diagram, $m\angle AOC - m\angle DOC$ is equal to the measure of what angle?

11. In the diagram, $\overrightarrow{SU}$ is the angle bisector of $\angle TSV$. $m\angle 1 = 3x + 7$ and $m\angle 3 = x + 3$. What is the value of $x$ if the measure of $\angle RSV$ is 82?

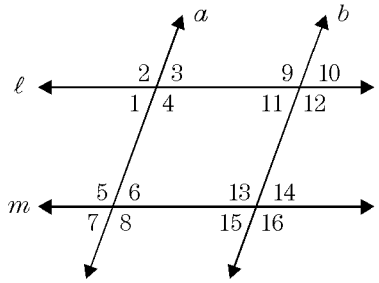



12. $\overrightarrow{NP}$ bisects $\angle MNO$, $m\angle MNP = 7x - 12$, and $m\angle ONP = 4x + 5$. What is the measure of $\angle MNO$?

13. Two angles form a linear pair. The measure of the larger angle is four times the measure of the smaller angle. What is the measure of the larger angle?

14. Two angles form a linear pair. The measure of the larger angle is twice the measure of the smaller angle. What is the measure of the larger angle?

15. Name the relationship between each pair of angles given.



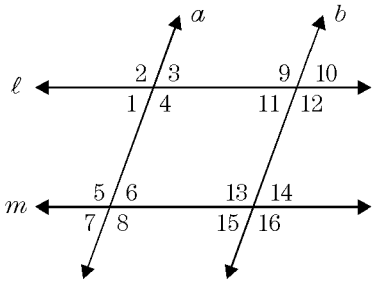

a) $\angle 11$, $\angle 15$

b) $\angle 1$, $\angle 6$

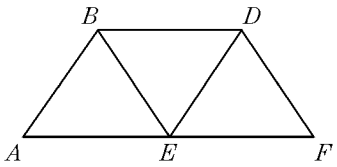
c) $\angle 9$, $\angle 16$

d) $\angle 3$, $\angle 6$

16. Name all of the corresponding angles in the figure formed by transversal $b$ and of lines $\ell$ and $m$.

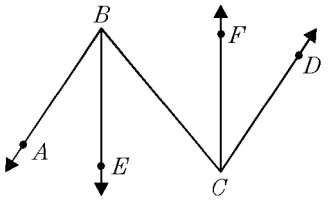



17. In the diagram, if $m\angle ABD + m\angle BDE = 180$. Which segments (if any) *must* be parallel?



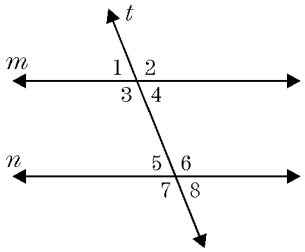

18. In the diagram, $m\angle DFE + m\angle BEF = 180$. Which segments (if any) *must* be parallel?

19. In the diagram, in order for $\overline{AB}$ to be parallel to $\overline{CD}$, $\angle DCB$ *must* be congruent to ____.



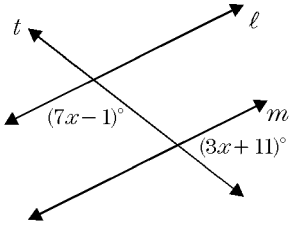

20. Name two alternate interior angles in the diagram that must be congruent for $\overleftrightarrow{BE}$ to be parallel to $\overleftrightarrow{CF}$.

21. In the diagram, line $m$ and line $n$ are parallel, $m\angle 4 = 3x + 18$, and $m\angle 6 = 21x - 6$. What is the value of $x$?

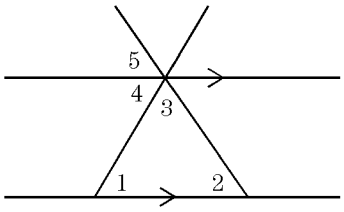



22. In the diagram, line $m$ and line $n$ are parallel, $m\angle 4 = 4x + 1$, and $m\angle 6 = 13x - 8$. What is the value of $x$?

23. Find $x$ so that $\ell \parallel m$.




24. In the diagram, the marked lines are parallel, $m\angle 1 = 58$ and $m\angle 2 = 50$. Find the measures of $\angle 3$, $\angle 4$, and $\angle 5$.

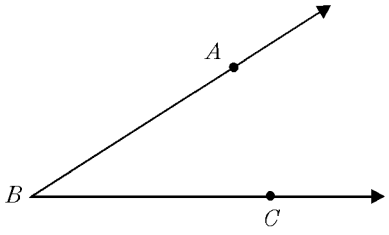



25. Sketch a concave octagon.

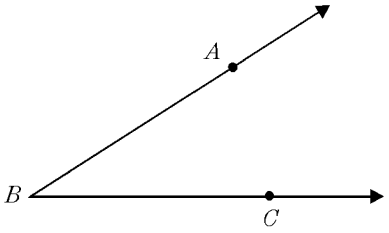
26. Draw and label a diagram showing $\angle ABC$ with point $D$ in its interior.

Using only a compass and straightedge, perform the following constructions.

27. Construct an angle congruent to $\angle ABC$.

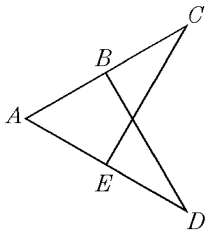


28. Construct the angle bisector of $\angle ABC$.



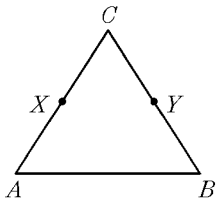

29. Given: $\overline{AC} \cong \overline{AD}$, $\overline{AB} \cong \overline{AE}$

Prove: $\overline{BC} \cong \overline{ED}$



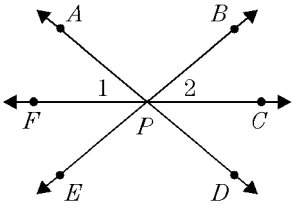

30. Given: $\overline{AX} \cong \overline{BY}$, $\overline{XC} \cong \overline{YC}$

Prove: $\overline{AC} \cong \overline{BC}$



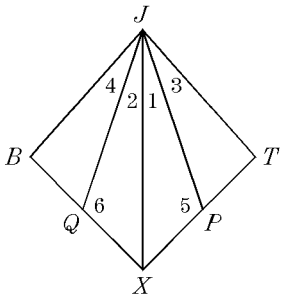

31. Given: $\overrightarrow{PF}$ bisects $\angle APE$, $\overrightarrow{PC}$ bisects $\angle BPD$

Prove: $\angle 1 \cong \angle 2$



32. Given: $\overline{JX}$ bisects $\angle PJQ$ and $\angle TJB$.

Prove: $\angle 3 \cong \angle 4$

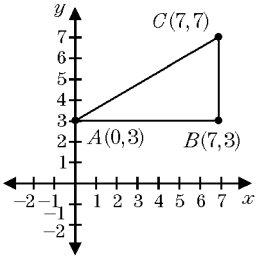



33. If the length of a rectangular plot is twice its width and the perimeter is 24 m, what is the length in meters?

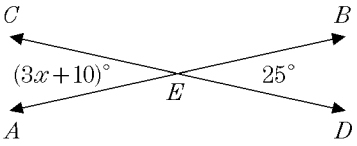
34. The length of a rectangle is twice its width. If the area of the rectangle is $162\,\text{cm}^2$, what is the length of the rectangle in centimeters?

35. Find the area of the triangle whose vertices have coordinates $(8, 0)$, $(0, 10)$, and $(0, 0)$.

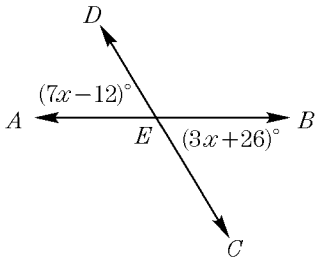
36. In the accompanying figure, $\triangle ABC$ has coordinates $A(0, 3)$, $B(7, 3)$, and $C(7, 7)$. Find the area of $\triangle ABC$.




37. In the accompanying diagram, $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect at $E$. If $m\angle BED = 25$ and $m\angle AEC = 3x + 10$, find the value of $x$.



38. In the accompanying diagram, $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect at $E$, $m\angle AED = 7x - 12$, and $m\angle CEB = 3x + 26$. Find the value of $x$.




39. What is the distance, in radical form, between the points $(4, 6)$ and $(8, -2)$?

40. In the coordinates of $A$ are $(-2, 3)$ and the coordinates of $B$ are $(7, -1)$, find, in radical form, the length of $AB$.

41. Write an equation of the line that passes through the point $(1, 6)$ and is parallel to the line whose equation is $y = 3x - 5$.

42. What is an equation of the line that is parallel to the $x$-axis and pass through the point $(2, 3)$?

43. What is the slope of the line that passes through the points $(4, 5)$ and $(7, 3)$?

44. Two points whose coordinates are $(4, 17)$ and $(2, a)$ determine a line whose slope is 6. Find the value of $a$.

45. Find the coordinates of the midpoint of the line segment whose endpoints are $(2, -6)$ and $(10, 4)$.

46. What are the coordinates of the midpoint of the segment whose endpoints are $(-4, 6)$ and $(-8, -2)$?

47. The midpoint of $\overline{AB}$ is $M$. If the coordinates of $A$ are $(2, -6)$ and the coordinates of $M$ are $(5, -1)$, find the coordinates of $B$.

48. The coordinates of the midpoint of $\overline{AB}$ are $(6, 8)$ and the coordinates of point $A$ are $(3, 2)$. Find the coordinates of point $B$.

49. Lines $\ell$ and $m$ are perpendicular. If the slope of line $m$ is $-\frac{4}{3}$, what is the slope of line $\ell$?

50. If the slope of $\overleftrightarrow{JK}$ is $\frac{3}{4}$ and $\overleftrightarrow{JK} \perp \overleftrightarrow{PQ}$, what is the slope of $\overleftrightarrow{PQ}$?

Geometry Fall Benchmark Review 10/5/2016

1.
Answer: $\overrightarrow{RQ}$, $\overrightarrow{RP}$
CodePath: EAS.GEO.A.E.22

2.
Answer: $\angle E$ is not clearly defined
CodePath: EAS.GEO.A.E.37

3.
Answer: If two angles share a common vertex, then they are adjacent.; false
CodePath: EAS.GEO.A.I.12

4.
Answer: If two lines intersect to form a right angle, then they are perpendicular.; true
CodePath: EAS.GEO.A.I.11

5.
Answer: acute
CodePath: EAS.GEO.B.A.20

6.
Answer: right
CodePath: EAS.GEO.B.A.21

7.
Answer: 12.5
CodePath: EAS.GEO.B.I.15

8.
Answer: $7\frac{1}{3}$
CodePath: EAS.GEO.B.I.16

9.
Answer: $\angle AOC$
CodePath: EAS.GEO.B.H.16

10.
Answer: $\angle AOD$
CodePath: EAS.GEO.B.H.17

11.
Answer: 13.8 or $\frac{69}{5}$
CodePath: EAS.GEO.B.J.20

12.
Answer: $55\frac{1}{3}^\circ$
CodePath: EAS.GEO.B.J.36

13.
Answer: $144^\circ$
CodePath: EAS.GEO.B.K.5

14.
Answer: $120^\circ$
CodePath: EAS.GEO.B.K.6

15.
Answer: corr; alt int; alt ext; corr
CodePath: EAS.GEO.C.A.3

16.
Answer: 9,13; 11,15; 10,14; 12,16
CodePath: EAS.GEO.C.A.22

17.
Answer: $\overline{AB} \parallel \overline{ED}$
CodePath: EAS.GEO.C.D.36

18.
Answer: $\overline{BE} \parallel \overline{DF}$
CodePath: EAS.GEO.C.D.35

19.
Answer: $\angle ABC$
CodePath: EAS.GEO.C.E.8

20.
Answer: $\angle EBC \cong \angle FCB$
CodePath: EAS.GEO.C.E.10

21.
Answer: 7
CodePath: EAS.GEO.C.F.43

22.
Answer: 11
CodePath: EAS.GEO.C.F.44

23.
Answer: 17
CodePath: EAS.GEO.C.F.11

24.
Answer: $72^\circ$; $58^\circ$; $50^\circ$
CodePath: EAS.GEO.C.F.13

25.
Answer: [sketch—conc. 8-gon]
CodePath: EAS.GEO.M.A.39

26.
Answer: [sketch]
CodePath: EAS.GEO.M.A.35

27.
Answer: [construction]
CodePath: EAS.GEO.M.B.43

28.
Answer: [construction]
CodePath: EAS.GEO.M.B.44

29.
Answer: [proof]
CodePath: EAS.GEO.N.B.26

30.
Answer: [proof]
CodePath: EAS.GEO.N.B.22

31.
Answer: [proof]
CodePath: EAS.GEO.N.C.39

32.
Answer: [proof]
CodePath: EAS.GEO.N.C.37

33.
Answer: 8 (m)
CodePath: EAS.MCC.C.A.8

34.
Answer: 18 (cm)
CodePath: EAS.MCC.C.A.17

35.
Answer: 40
CodePath: EAS.NY1.I.A.D.75

36.
Answer: 14
CodePath: EAS.NY1.I.A.D.98

37.
Answer: 5
CodePath: EAS.NY1.I.A.E.10

38.
Answer: 9.5
CodePath: EAS.NY1.I.A.E.55

39.
Answer: $4\sqrt{5}$
CodePath: EAS.NY1.2.D.D.3

40.
Answer: $\sqrt{97}$
CodePath: EAS.NY1.2.D.D.16

41.
Answer: $y = 3x + 3$
CodePath: EAS.NY1.2.D.D.5

42.
Answer: $y = 3$
CodePath: EAS.NY1.2.D.D.36

43.
Answer: $-\frac{2}{3}$
CodePath: EAS.NY1.2.D.D.10

44.
Answer: 5
CodePath: EAS.NY1.2.D.D.7

45.
Answer: $(6, -1)$
CodePath: EAS.NY1.2.D.D.25

46.
Answer: $(-6, 2)$
CodePath: EAS.NY1.2.D.D.56

47.
Answer: $(8, 4)$
CodePath: EAS.NY1.2.D.D.68

48.
Answer: $(9, 14)$
CodePath: EAS.NY1.2.D.D.77

49.
Answer: $\frac{3}{4}$
CodePath: EAS.NY1.2.D.D.44

50.
Answer: $-\frac{4}{3}$
CodePath: EAS.NY1.2.D.D.134